

## Claims

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1. Process for the production of a eukaryotic alkaline phosphatase in yeast cells comprising the steps:
- a) cloning a gene sequence into different vectors
  - b) transformation of the yeast, c) expression and
  - d) purification of the alkaline phosphatase, wherein
    - a first vector has a resistance gene for a first selection marker
    - transformants which have integrated the resistance gene and the gene sequence into the genome are selected by growth on nutrient medium containing a low concentration of a first selection marker,
    - the gene copy number is increased by multiple transformation in which multiple transformants are selected by growth on nutrient medium at an increased selection pressure,
    - a second vector is added which has a resistance gene for a second selection marker,
    - the gene copy number is increased by multiple transformation with the second vector in which multiple transformants are selected by growth on nutrient medium at an increased selection pressure and
    - those clones are selected which have integrated several copies of the gene sequence and the selection marker resistance genes in a stable manner.
2. Process according to the invention, wherein the gene sequence corresponds to SEQ ID NO:1.

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cont.
3. Process as claimed in one of the claims 1 or 2, wherein the gene sequence corresponds to SEQ ID NO:5.
  4. Process as claimed in one of the claims 1 to 3, wherein methylotrophic yeast cells are used.
  5. Process as claimed in one of the claims 1 to 4, wherein *Pichia pastoris* or *Hansenula polymorpha* is used as the yeast strain.
  6. DNA according to SEQ ID NO:5.
  7. Vector containing SEQ ID NO:5.
  8. Vector as claimed in claim 7, which essentially corresponds to pHAP10-3.
  9. Vector containing the entire expression cassette from pHAP10-3.
  10. Vector as claimed in claim 9, which essentially corresponds to pHAP10-3/9K.
  11. Host strain transformed with a vector as claimed in claim 9 or 10.
  12. Host strain transformed with the vector pHAP10-3/9K and/or a vector as claimed in claims 7 or 8.

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